AMENDMENTS TO THE SPECIFICATION

Numerous small amendments eliminate references to a "12-step" method, "The diameter of the hole" in the backbore (page 9) is rephrased, to better correspond with drawings with the same intended meaning. Corrected language for page 17 makes more clear the difference between undivided elements (like backbore) and divided "sections" (like backbore sections) that are shown and discussed in combined disclosures of original Figure 10 with Claims 3, 4 & 5. Corresponding correction and addition to Drawing Reference Numerals are made in the Specification on page 8. All amendments have a clear antecedent basis in the original specification, original drawings, original claims, or combinations thereof.

(starting on original page 8)

~~Fig.10 Three views of a three-section trumpet mouthpiece from prior art~~

Fig.10 An example of separate sections for a brass-wind mouthpiece

DRAWINGS - REFERENCE NUMERALS

10, 20, 30, 40, 50, 60, 70, & 80 = complete, undivided mouthpiece bodies

~~11, 21, 31, 51, 61, 71, 81, & 101 = backbore-chambers~~

~~12, 22, 32, 42, 52, 62, 72, 82, & 102 = cup-chambers   23, 83, & 103 = rims~~

~~84 = a center-bore   25 & 85 = decorative regions   26 & 86 = end-tapers~~

11, 21, 31, 41, 51, 61, 71, & 81 = backbore-chambers

12, 22, 32, 42, 52, 62, 72, & 82 = cup-chambers   84= a center-bore

23, 43, 53, 63, 73 & 83 = rims   26 46, 56, 66, 76, & 86 = end-tapers

25, 45, 55, 65, 75, 85, & 105 = decorative regions

L1 = length of backbore -chamber   L2 = length of cup-chamber

101 = a backbore section 102 = a cup-chamber section   103 = a rim section

104 = a "bottom section"   110 = a "top section"

106a, 107a, &109a = internal screw-type fasteners

106b, 107b, &108b = external screw-type fasteners   *(continued...)*

DETAILED DESCRIPTION - PREFERRED EMBODIMENT

~~Steps 1 through 10 of a 12-step method describe~~ <u>The following first method describes</u> one way to shape a new mouthpiece so its cup-chamber and backbore-chamber are acoustically balanced in accordance with the principle of inverse proportionality. ~~Steps 11 & 12 further assist the creation of~~ <u>The first method then continues to explain how to create</u> one or more sets of such new mouthpieces. These initial shapes are then "fine-tuned" with minor adjustments if desired. After presenting the ~~12-step~~ <u>first</u> method, a specific example demonstrates how one interrelated set of such multi-length mouthpieces is created.

(on page 9, at the top)

3. Measure <u>the smallest diameter of the backbore (d1) at the</u> center-bore ~~diameter (d1)~~ of the reference mouthpiece. The center-bore, or throat, is the smallest internal diameter and it is boundary point between the cup-chambers and backbore-chambers. Measure <u>the largest</u> diameter <u>of the backbore</u> (d2) ~~of the hole located~~ at the small end of the reference mouthpiece.

(on page 11, starting mid way down)

Adjust or "fine-tune" these shapes to meet the requirements of specific instruments or musicians' needs by using normal mouthpiece tools like center-bore reamers, backbore reamers and cup shapers in accordance with traditional adjustment practices. For some instruments, a slight foreshortening of the calculated design lengths may be useful because the ~~12-step~~ <u>first</u> method is intended to apportion any errors of approximation towards excess length, since length cannot be conveniently added to a mouthpiece body. For persons skilled in acoustical measurements, the fundamental resonance frequency of a mouthpiece, when closed at its large end, can be used as a guide for fine-tuning

a mouthpiece. Each mouthpiece from an interrelated set of such fine-tuned mouthpieces bodies has a resonant frequency and a volumetric size that are similar to the other mouthpieces from that set. For different kinds of brass wind instruments, fine-tuned sets each have separate volumetric sizes and separate resonant frequencies.

(starting page 12, near the bottom)

The Yamaha cup-volumes vary by a factor of about 2, whereas Fig. 4 to 8 have cup-volumes that vary by a factor of about 5. Greater variation in cup-volume produces a wider range in the timbre of sound. When desired, additional increments in of size between those of Fig. 4 and 8 produce a larger variety of additional musical timbres. A large set consists of eight trumpet mouthpieces with cup-volumes ranging from 2.5cc to 0.5cc that all use the same cup diameter of about 16mm. Additional sets are created when cups diameters like 18mm, 17mm, and 15mm are substituted according to Step 12 of the first method.

(starting page 13, near the bottom)

Similar benefits, as thus far described, also apply to other kinds of brass wind instruments when the principle of inverse proportionality is applied, in turn, to mouthpieces for those instruments. These instruments include piccolo trumpets, cornets, flugelhorns, French horns, baritone horns, euphoniums, trombones, tubas, sousaphones, alto horns, tenor horns, mellophones, bass trumpets, Wagner tubas, and similar brass wind instruments not specifically named. Sets of mouthpieces, for each instrument, have a separate range of physical proportions that relate to separate end-taper standards. The 12-step first method can be used to create over two-hundred useful mouthpieces for such instruments when based upon widely- accepted end-taper standards as published by the Vincent Bach Corporation.

(starting page 14, near the top)

For an experienced mouthpiece designer the above descriptions are both specific and fully disclosed. To the extent that the ~~12-step~~ first method may approximate the design of a mouthpiece from prior-art, such a design represents new usage as an incremental member from a correlated set of mutli-length mouthpieces.

ALTERNATIVE EMBODIMENTS

Once the principle of inverse proportionality is fully comprehended, it becomes obvious that alternative methods can be used to design similar sets of multi-length mouthpieces. For example, using divisible parts like those shown in Figure 10, a designer can simply "mix and match" separately varied cup-sizes and backbore-lengths until suitable combinations are found that worked well with an instrument. Successful combinations are then fabricated as one-piece bodies that can form a set. This alternative method produces similar, but not identical results when compared to mouthpiece designs from the ~~12-step~~ first method. Such an empirical design method simply represents an alternative variation in the physical expression of the principle of inverse proportionality.

(starting page 15, near the middle)

Some trombone players may prefer a shorter range of mouthpiece lengths than the one's calculated in the ~~12-step~~ first method above. This is because trombonists' overall hand-reach-distance for slide positions may be affected by the different lengths of inversely-proportioned mouthpieces. Such sensitive musicians may prefer a re-proportioned design that provide many improvements of inverse proportions while minimizing extremes in length.

(starting page 17, near the middle)

Fig. 10 shows ~~three~~ several views ~~of a typical three-section trumpet mouthpiece as adapted from~~ for the mouthpiece of Fig. 8 in a style similar to U.S. Patent #4,395,933 (1983) of Joseph J. Shepley. Backbore section 101, cup section 102, and rim section 103 all detach and re-attach with screw-threaded fasteners. These sections function in the same manner as a one-piece mouthpiece body when combined. Several mouthpiece makers also feature separable two-piece designs that utilize parts like "top section" 110 and backbore section 101. ~~resemble Fig. 10 except elements like rim 103 and cup 102 are formed as a single, non-divisible "top-section".~~ A ~~similar~~ "bottom section" 104 has a single~~, non-divisible combination of backbore 101 with cup 102~~ undivided body that attaches to rim 103 with screw-threaded fasteners. New usage of such divisible components for inversely-proportioned mouthpieces will be preferred by some trumpet players, despite the increased costs that accompany such additional features. This new usage applies equally well to inversely-proportioned mouthpieces for all brass wind instruments.